



Ed

Online

PocketLab

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[Interactive Student Lesson, Day 2](#)[Print Student Edition, Day 2](#)[Hands-On Activity, Downloadable Worksheet](#)

Hands-On Activity

Weather All Around, Part 1

TIME 25 minutes**TEKS****3.10.A****PAGE 261**

Scientific and Engineering Practices

3.1.C demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards

3.1.D use tools, including hand lenses; ... Celsius thermometers; wind vanes; rain gauges; ... materials to support digital data collection such as computers, tablets, ... to observe, measure, test, and analyze information

3.1.F construct appropriate graphic organizers to collect data, including ... bar graphs

Key Learning Activity

Learning Objective

Students will be able to conduct a weather investigation using weather tools and tablets or computers to collect and record data about wind direction and measure air temperature and precipitation.

Sense-Making

Students will understand that using measurement tools makes describing and comparing weather from day to day and from place to place accurate and easy to analyze. This part of the three-part activity gives students the opportunity to develop fluency with measurement units, including degrees Celsius and fractions of inches of precipitation. In later parts of this activity, students will compare weather by working with numerical data.

Model and Explain Content to help students be successful during this activity. Model and explain content using the sentence frames with the Claims, Evidence, and Reasoning section. Be sure to model a simple claim, support it with evidence, and explain how your evidence supports your claim.

Materials

- Celsius thermometer
- wind vane
- rain gauge
- computer or tablet with Internet connection

Preparation Tips

If available, keep one set of weather tools in the classroom; place the other set of tools outdoors about 24 hours in advance.

Make sure students have adequate clothing (e.g., hats, rain gear) for working outdoors.

Draw a sample wind table and temperature and precipitation graph that students can use as a model. Identify suitable websites where your students can collect temperature, precipitation, and wind data by city.

Safety

Make sure students are dressed for the weather with sun or rain protection, as needed.

Review safe practices for field science investigations on school grounds.

If the thermometer has glass parts, alert students to handle it gently and to alert you if they drop it.

Have students wash their hands when they return to the classroom.

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Step 1

Show students models for their wind direction tables and how to draw the bar graphs for temperature and precipitation, including deciding on the measurement intervals and labeling each axis.

Relate the scale on the Celsius thermometer to a number line, and have students practice reading the indoor air temperature.

Have students talk to one another about how they can use fractions when the top of water inside the rain gauge is between two whole numbers.

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Steps 4–5

Support for Student Answers

Is it blowing in a constant direction, or is it changing a lot? **Sample answer:** The wind is changing direction a lot because I see the wind vane moving back and forth.

Is it warmer or cooler than the temperature in the classroom? **Sample answer:** The thermometer shows a higher number, so it is warmer outside than in the classroom today.

Students as Scientists

Check students' understanding by having them identify the three locations for which they are collecting weather data. **Ask:** What are the two ways you collected weather data in Part 1 of this activity?

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Steps 7–8

Students may record online weather data in tables, bar graphs, or as shown in the graphic.

Make sure they label their data with the name of the city and the date they collected it.

Differentiation: Extra Support

If students struggle with cardinal directions, place a block representing your school in the middle of large sheet of paper on the floor. Have students identify landmarks in the direction the sun sets in the evening as West and rises in the morning as East. Draw them on the map. Then identify other landmarks that are to the North and South of the school, and draw those too. Label each landmark with the correct cardinal direction.



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Exit Ticket/Formative Assessment

Provide Feedback to students by pointing out any missing measurement units (for example degrees Celsius) in their weather descriptions. Invite students to share and compare the weather data they collected online.

Support for Student Answers

Describe today's weather in each of the different locations for which you collected data. Be sure to include air temperature, wind direction, and precipitation in each description.

Your answer might look something like this:

- Location 1: The air temperature was 15 °C, the wind was blowing from the West, and there was no precipitation.
- Location 2: The air temperature was 30 °C, the wind was blowing from the South, and there was 1 cm of rain.
- Location 3: The air temperature was 10 °C, the wind was blowing from the North, and there was no precipitation.



Name _____

Date _____



Hands-On Activity

Weather is always happening and can change quickly. **Precipitation**, wind, and temperature are parts of weather that change. All three can be used to describe and compare weather.

Ask a question about how weather can be described and compared.



Materials

- Celsius thermometer
- wind vane
- rain gauge
- computer or tablet with Internet connection

Safety

Demonstrate safe practices during field investigations by:



Washing your hands after coming in from an outdoor investigation.

- Staying with your group. Work in the area as directed by your teacher.





Hands-On Activity

Weather All Around, Part 1

Weather tools can be used to observe and measure different parts of weather.

Before you begin this investigation, make a table to collect wind direction data. Construct bar graphs to collect temperature and precipitation data.



Step 1

Examine the weather tools your teacher provides. Record the air temperature in the classroom using the Celsius thermometer.

Step 2

Visit each station that your teacher set up outside to observe and measure the weather. Collect the data you measure.

Step 3

Use the rain gauge to observe any precipitation. Measure the amount using the rain gauge.

Step 4

Use the wind vane to observe wind direction. Is it blowing in a constant direction, or is it changing a lot? Use the wind vane to measure the wind direction.

Step 5

Use the Celsius thermometer to observe the air temperature.
Is it warmer or cooler than the temperature in the classroom?
Use the Celsius thermometer to measure the air temperature.

Step 6

Record your observations and measurements. Then return to the classroom.

Step 7

Choose two locations from this list:

- *Dallas, Texas*
- *Springfield, Illinois*
- *Boise, Idaho*
- *Miami, Florida*
- *Phoenix, Arizona*
- *Concord, New Hampshire*

Use a tablet or computer to find and record the wind direction, air temperature, and precipitation for each area you chose.

Step 8

Collect and record the data you measured. You will use this data in the next activity.



Currently

60 °F
16 °C
Rainfall: 1 inch
Wind: From the South

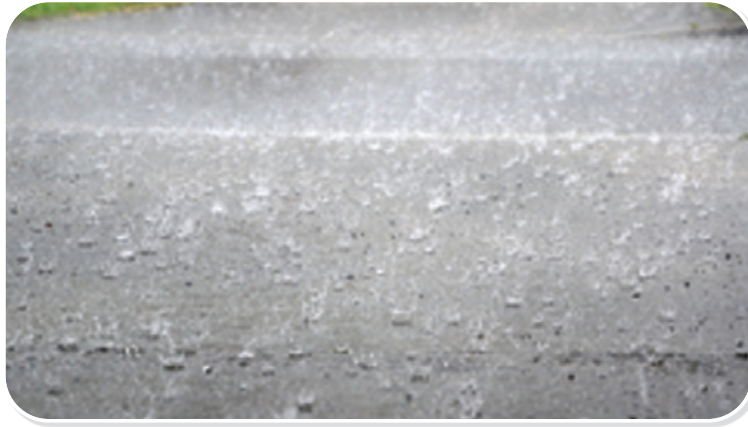
	Precipitation	Wind direction	Air temperature	warmer/cooler
Station 1				
Location 1				
Location 2				

Exit Ticket

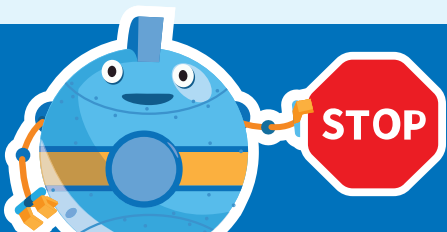
Check your learning with this question.

Look at the data you collected for air temperature, precipitation, and wind direction. You can use the data to describe today's weather.

Describe today's weather in each of the different locations for which you collected data. Be sure to include air temperature, wind direction, and precipitation in each description.



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Nombre _____

Fecha _____



Actividad práctica

El estado del tiempo es algo que se produce siempre y puede cambiar rápidamente. La **precipitación**, el viento y la temperatura forman parte del estado del tiempo y siempre cambian. Los tres pueden usarse para describir y comparar el estado del tiempo.

Haz una pregunta acerca de cómo se puede describir y comparar el estado del tiempo.



Materiales

- termómetro en grados Celsius
- veleta
- pluviómetro
- computadora o tableta con conexión a Internet

Seguridad

Aplica las siguientes prácticas de seguridad durante las investigaciones de campo:



Lávate las manos después de volver de una investigación al aire libre.

- Quédate siempre con tu grupo. Trabaja en el área que te indique el maestro.





Actividad práctica

Diferentes estados del tiempo, Parte 1

Los instrumentos meteorológicos pueden usarse para observar y medir las diferentes partes del estado del tiempo.



Antes de comenzar esta investigación, haz una tabla para reunir datos sobre la dirección del viento. Haz gráficas de barras para reunir datos sobre la temperatura y las precipitaciones.

Paso 1

Examina los instrumentos meteorológicos que te dé tu maestro. Registra la temperatura del aire en el salón de clases con el termómetro en grados Celsius.

Paso 2

Visita cada estación que tu maestro haya instalado afuera para observar y medir el estado del tiempo. Anota los datos que midas.

Paso 3

Usa el pluviómetro para observar las precipitaciones. Mide la cantidad de lluvia con el pluviómetro.

Paso 4

Usa la veleta para observar la dirección del viento. ¿Sopla en una dirección constante o cambia mucho? Usa la veleta para medir la dirección del viento.

Paso 5

Usa el termómetro en grados Celsius para observar la temperatura del aire. ¿Es más cálida o más fría que la temperatura del salón de clases? Usa el termómetro en grados Celsius para medir la temperatura del aire.

Paso 6

Anota tus observaciones y medidas. Luego, vuelve al salón de clases.

Paso 7

Elige dos ubicaciones de esta lista:

- Dallas, Texas
- Springfield, Illinois
- Boise, Idaho
- Miami, Florida
- Phoenix, Arizona
- Concord, New Hampshire

Usa una tableta o una computadora para buscar y registrar la dirección del viento, la temperatura del aire y las precipitaciones de cada lugar que elegiste.

Paso 8

Reúne y anota los datos que mediste. Usarás esos datos en la siguiente actividad.



Actualmente

60 °F
16 °C
Lluvia: 1 pulgada
Viento: del sur

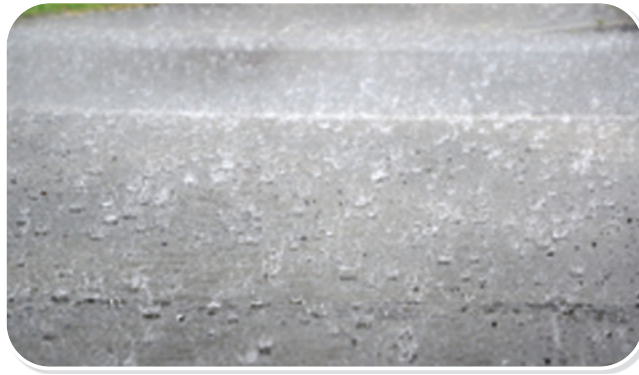
	Precipitación	Dirección del viento	Temperatura del aire	más calido/ frío
Estación 1				
Locación 1				
Locación 2				

Boleto de salida

Comprueba tu aprendizaje con esta pregunta.

Observa los datos que reuniste de la temperatura del aire, las precipitaciones y la dirección del viento. Puedes usarlos para describir el estado del tiempo de hoy.

Describe el estado del tiempo de hoy de cada una de las ubicaciones de las que reuniste datos. Recuerda que debes incluir la temperatura del aire, la dirección del viento y las precipitaciones en cada descripción.



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